Zero Retries issue 0060 2022-08-19

Zero Retries is a unique, quirky little highly independent, opinionated, self-published email newsletter about technological innovation in Amateur Radio, for a self-selecting niche audience, that's free (as in beer) to subscribe.

About Zero Retries

Steve Stroh N8GNJ, Editor

Jack Stroh, Late Night Assistant Editor Emeritus

In this issue:

- **Pseudosponsor - ARRL and TAPR Digital Communications Conference**
- **Request To Send**
- ***Breaking* - New Zero Retries Interesting Radio - IC-905**
- ***Breaking* - Amateur Radio 5.9 GHz band no longer "exclusive"**
- **Zero Retries 0060 Omnibus of Zero Retries Interesting Information**
- **ZR > BEACON**
- **Zero Retries Poll**
- **Zero Retries Sponsorships**
- **Join the *Fun* on Amateur Radio**
- **Closing The Channel**

Pseudosponsor - ARRL and TAPR Digital Communications Conference

This issue of Zero Retries is pseudosponsored by the 2023 ARRL and TAPR Digital Communications Conference which will be held in Charlotte, North Carolina, USA on September 16-18, 2022. Registration

---

Request to Send

Countdown to Digital Communications Conference 2022 - September 16-18, in Charlotte, North Carolina, USA:
~~10~~ ~~09~~ ~~08~~ ~~07~~ ~~06~~ ~~05~~ 04 weeks…
Countdown to DCC 2022 Paper submission deadline - September 1:
~~~08~~ ~~~07~~ ~~~06~~ ~~~05~~ ~~~04~~ ~~~03~~ ~02 weeks…

Urk… I neglected to post the *Countdown to Digital Communication Conference 2022* in the last few issues of Zero Retries. While I don't plan to attend the DCC in person, I do plan to submit a paper for the DCC and now I'm at two weeks to complete it. Thus, *that* will be "Task 1" this coming week.

JARL (Japan Amateur Radio League) 2022 Ham Fair is this weekend in Tokyo, Japan1. Have a great conference, folks!

Wow… it's been another 10 issues of Zero Retries already, thus it's time for another Omnibus of Zero Retries Interesting Information. Welcome to all the new Zero Retries readers who haven't seen an Omnibus.

The idea of the Omnibus is to highlight just how much Zero Retries Interesting technological innovation *is* going on in (and adjacent to) Amateur Radio. If you're technologically curious, my hope is that you'll find some interesting items that you weren't aware of.

Twice before, I've tried to keep the Omnibus to a single issue, and failed. *This* time I used a different approach to keep the Omnibus to *one* issue of every ten - publish it as a web page. It's a *long* web page - as I write this, the blog / web page editor says it's 9168 words. So, bookmark it and come back to it as often as you wish.

I'm publishing the **Zero Retries 0060 Omnibus of Zero Retries Interesting Information** on my SuperPacket blog platform (but not as a blog entry that will eventually age out, but rather as a static web page). SuperPacket is currently running on the Typepad blogging platform, which is showing its vintage, and thus not quite as visually appealing as Substack… but it gets the job done. It will remain a static web page, not updated. A new version of the Omnibus will be published in conjunction with Zero Retries 0070 approximately in mid-October 2022.

Another new feature of Zero Retries is that I'll run a poll every issue, towards the end of each issue.

I intended to include ten highlights from the Omnibus in this issue, but the Breaking news items immediately below consumed significant space in this week's issue, so I dialed it back to only five highlights.

de Steve N8GNJ

Breaking **- New Zero Retries Interesting Radio - IC-905**

Image courtesy of Twitter user harmlesshamCQ

Background:
Icom Japan SHF Project Volume 3 - “Hardware” (Zero Retries 0043)
Icom SHF Project / SHF-P1 (Zero Retries 0048)

My Twitter feed came alive this morning with mentions of the Icom IC-905. The (Tokyo / JARL) Ham Fair 2022 is this weekend, so this news emerging today makes sense.

As I write this, mid morning prior to publication, there is no official information available from Icom. That’s true to form lately for Icom - I don’t think they ever posted the SHF-P1 data sheet that Icom handed out at Hamvention 2022.

From appearances, the IC-905 is the evolution of the concept unit (SHF-P1) that was shown under glass at Hamvention 2022. That unit was stated as a 2.4 GHz / 5.6 GHz unit. At the time, I found it curious why Icom had not included the 10 GHz band in the unit, which would then make it a good fit for Amateur Radio Operators in the Eastern Hemisphere for working the QO-100 geostationary satellite payload which uses 2.4 GHz uplink, and 10 GHz downlink.

Either Icom listened to my speculation (unlikely) or they were way ahead of me (nearly certain). The IC-905 appears to be a six-band radio covering the (Japan) Amateur Radio VHF / UHF / SHF bands: 144 MHz, 430 MHz, 1.2 GHz, 2.4 GHz, 5.6 GHz, and 10 GHz. Including 10 GHz in a “mainstream” Amateur Radio unit is (as far as I’m aware) a first - kudos to Icom for that.

It’s speculation on my part, but the IC-905 appears to be a straightforward extension of the IC-9700. The IC-9700 covers the Amateur Radio 144 MHz, 440 MHz, and 1.2 GHz bands. The IC-905 adds 2.4 GHz, 5.6 GHz, and 10 GHz by incorporating those radios into an external unit to be installed near the antennas. In the SHF-P1, there was no RF between the display and the radios - only Ethernet. Likely that configuration is retained in the IC-905, and that makes for a clean evolution of the IC-9700 into the IC-905 because the microwave bands are digitized in the external unit, transmitted over Ethernet, and then it’s “merely processor and software” work in the IC-905 desktop unit to use all six bands. Thus, it’s conceivable (but unlikely) that Icom could offer the external unit as an add-on to existing IC-9700 radios - ***if*** Icom incorporated sufficient processor / memory / digital signal processor resources in the IC-9700 to accommodate the use of the external unit.

Like at Hamvention 2022, this is a not *quite* a product, but with a “real” Icom product name, it’s probably pretty close. It will be interesting to see the official details of the IC-905 from Icom.

Breaking **- Amateur Radio 5.9 GHz band no longer “exclusive”**

In July, 2021 a rule change by the FCC for the 5.9 GHz band (5.850 - 5.925 GHz) was published in the Federal Register. That rule change allocated the lower 45 MHz - 5.850 - 5.895 GHz to unlicensed users (similar to existing unlicensed bands).

For Amateur Radio, the effect of that ruling was that part of the Amateur Radio allocation - 5.650 - 5.925 GHz would now have unlicensed users in the 5.850 - 5.895 GHz segment. From my reading of the rules change, there was no change to the Amateur Radio allocation, rules, etc. - Amateur Radio remains a secondary user in 5.850 - 5.925 GHz.

Because of a court challenge, the rules change did not take effect immediately. The court challenge was resolved this week in favor of the FCC, so likely the rules change will take immediate effect.

There are a number of Amateur Radio microwave networks in use in 5.9 GHz such as HamWAN.

Zero Retries 0060 Omnibus of Zero Retries Interesting Information

The complete Omnibus is at https://www.superpacket.org/zero_retries_0060_omnibus.html.

Here are five highlights from this Omnibus.

1. The MIT Big Dish (Radome)

> MIT Radio Society Radome Renewal - To date, this is my favorite ARDC grant, mostly because the scope was *audacious* and something *only* ARDC could have done, and it enabled some really, really bright people with new capabilities. The Boston Globe did a nice article about this project.

A new section of the Omnibus is some of my favorite **Amateur Radio Digital Communications (ARDC) Grants**. The choice of grants listed there are highly subjective and “these seem cool to me”. My all time favorite grant (so far) was funding the repair and refurbishment of “The Big Dish” (18 feet, in a 26 foot radome) for the MIT Amateur Radio Society.

To have an essentially new dish, radome, controls, etc. physically on the campus of MIT, and then on top of a 22 story building in Cambridge… all controlled, enhanced, and used by very bright, young Amateur Radio Operators… the mind reels at the possibilities for Amateur Radio fun… and, of course, science 😀. I look forward to working W1MX via Earth-Moon-Earth (Moonbounce) sometime in the next few years once they get the Big Dish back online.

…

2. RPX-100

> RPX-100 - A project by Austrian Amateur Radio Society (ÖVSV) to develop a 6 meter (50-54 MHz) / 2 meter (144-148 MHz) / 70 centimeter (440-450 MHz) radio based around a Software Defined Transceiver (LimeSDR Mini).

In the Omnibus, this is in the **Interesting Projects In Development** section. I'm a big fan of this project because they get so many things right! The three bands the RPX-100 will support are very good choices. It will also provide much faster speeds (and new [to Amateur Radio] network protocols than most Amateur Radio data communications systems. The development of the RPX-100 is simplified by using off-the-shelf Raspberry Pi Compute Module 4 as the processor, and a LimeSDR Mini as the radio. Remaining hardware development is developing a carrier board fo the CM4 and driver and power amplifiers for the three different bands. I was following this project before they requested and received an ARDC grant. Judging by this recent presentation video (Vimeo's auto-translated captions are useless) they seem to be making progress.
…

3. FLAMP and RadioMirror

> FLAMP - One of the modes from the fldigi suite that streams files - one transmitter, many receivers. Receivers can be entirely passive - no acknoledgements required; if there's an error in one block, the receiver waits for a "fill" from a future transmission cycle. See also RadioMirror.

> RadioMirror - Basically, streaming blocks of files, with a checksum. I wrote a blog post on RadioMirror that explains my vision.

The **Networking - VHF / UHF - Software** section isn't new, but it has a lot more entries than the previous two versions. I wrote this as much for myself as for newcomers to Amateur Radio and those trying to "get a handle" on Amateur Radio data communications. I'm still fascinated by the potential of FLAMP and RadioMirror and FLAMP.

There's *so* much prior art in Amateur Radio Packet Radio that it's sometimes tough to know where to start, so, at a minimum, this section is *somewhere to start*.

…

4. Mimosa Networks 10 GHz Units

> Mimosa Networks - Some Mimosa Networks units are compatible with the Amateur Radio 10.0 - 10.5 GHz band. For sales of their 10 GHz units in the US, Mimosa Networks requires proof of Amateur Radio license.

The **Networking - 1240 MHz and Above** section is another not-new, but considerably updated. Amateur Radio has had an allocation in the 10 GHz band since approximately forever, but it's mostly been used for experimentation and contesting. Thus it will be news that there are now off-the-shelf microwave networking units from Mimosa Networks that can make use of Amateur Radio's 10 GHz band for broadband data communications.

…

5. Multipurpose Remote Nodes

> Multipurpose Remote Nodes - Remotely configurable nodes for Winlink / APRS / fldigi (fsq) relay, and other modes.

In the **Special Categories** section, I included Multipurpose Remote Nodes which was a great idea implemented here at a number of sites here in Whatcom County, Washington. These remote nodes are remotely configurable to be Winlink Radio Mail Server, APRS digipeater / Igate, fldigi (fsq) relay nodes.

ZR > BEACON

M17 Projects List

This is a nice summary of the various (public) projects underway with M17.

Linux may soon lose support for the DECnet protocol

> For a long time, DECnet was a significant network protocol. DEC supplied a client stack called PathWorks to let DOS, Windows and Mac clients connect to VAX servers, not only for file and print, but also terminal connections and X.11. Whole worldwide WANs ran over DECnet…

This is Zero Retries Interesting only because of the Linux kernel being willing to support (now) obscure networking protocols for extended periods. Fortunately, AX.25 support in the Linux kernel is getting some attention thanks to an ARDC grant (missing website for the project notwithstanding).

Ham Made Parts

A tiny vendor of cables and a few accessories for interfacing data units (formerly, TNCs) to radios, most of which have no other source for assembled cables. I've bought cables from HMP and it was a good experience.

W0RW Lending Library

> This is a Free (No Smoking) Lending Library.

Interesting idea! Apparently the idea is to loan you a book (loosely related to Amateur Radio), sent by postal mail, you read it, and return it.

Zero Retries Poll

Last week's poll:
Do you think that Amateur Radio should "be more involved" in familiarizing students about radio technology?

26 votes cast, Yes! - 96%, No (Just have fun with AR!) - 4%.

Zero Retries Sponsorships

The Zero Retries sponsorship model is *evolving*, but it's initially inspired by the Daring Fireball blog's sponsorship model (other than this sponsorship cost). Some initial points:

Sponsorship of Zero Retries is only available to "Zero Retries Interesting" companies, organizations, individuals, and projects. Ideally, a Zero Retries sponsor is involved in Amateur Radio, but that's not an absolute requirement. If an individual or company would like to sponsor Zero Retries, but prefer to remain anonymous, that's acceptable, but the "Zero Retries Interesting" criteria still apply.

- Sponsorships are limited to a *brief* mention in Zero Retries - a few sentences at most (but prominently displayed). Example - "WhizzyPacket is proud to sponsor this week's Zero Retries". More targeted sponsorship messages are acceptable, such as "WhizzyPacket is looking for a few good engineers - click here".
- A sponsorship is for *one* weekly issue of Zero Retries and is exclusive - one sponsor per week. Sequential sponsorships are available - as much as three months of sponsorship is acceptable. Longer than three months, let's discuss it.
- Lastly, although it kind of defeats the overt purpose of sponsorship, if a *Zero Retries Interesting company, organization, individual, or project cannot afford to pay for a sponsorship*, but wants / needs to "get the word out", Zero Retries can probably work something out. In fact, if there are gaps in sponsorships, I'll probably create some gratis sponsorship messages.

If you are interested in sponsoring Zero Retries, please reach out - it's early days. More importantly, if you know of a company, organization, project, or individual that you think could / would / should sponsor Zero Retries, *please point out Zero Retries to that entity*.

Join the *Fun* on Amateur Radio

If you're not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, check out
Join the Fun on Amateur Radio for some pointers.

Closing the Channel

In its mission to highlight technological innovation in Amateur Radio, promote Amateur Radio to techies as a literal license to experiment with wireless technology, and make Amateur Radio more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to anyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex, which hides Amateur Radio content behind paywalls.

My ongoing ***Thanks*** to:

- Tina Stroh KD7WSF for, well, *everything!*
- Pseudostaffer Dan Romanchik KB6NU for continuing to spot, and write about "Zero Retries Interesting" items on his blog that I don't spot on my own.
- Amateur Radio Weekly and Southgate Amateur Radio News consistently surface "Zero Retries Interesting" stories.
- The Substack email publishing platform makes Zero Retries possible. I recommend it for publishing newsletters.

If you're reading this issue on the web and you'd like to see Zero Retries in your email Inbox every Friday afternoon, just click:

Subscribe now

If you're a fellow smart person that uses **RSS**, there *is* an **RSS feed for Zero Retries**.

Zero Retries is on Twitter @ZeroRetries - just click:

Zero Retries on Twitter

Please tell your friends and co-conspirators about Zero Retries - just click:

Share Zero Retries

Offering **feedback or comments** for Zero Retries is equally easy; yes, you guessed it… just click:

Leave a comment

Email issues of Zero Retries are “instrumented” by Substack to gather basic statistics about opens, clicking links, etc. I don’t use such information in any way other than seeing that most subscribers actually do read Zero Retries.

More bits from Steve Stroh N8GNJ:

- SuperPacket blog - *Discussing new generations of Amateur Radio Data Communications - beyond Packet Radio (a precursor to Zero Retries)*
- N8GNJ blog - *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs - Bellingham, Washington, USA*

Thanks for reading!
Steve Stroh N8GNJ / WRPS598 (He / Him / His)
These bits were handcrafted in beautiful Bellingham, Washington, USA
2022-08-19

If you’d like to reuse an article in this issue, for example for club or other newsletters, just ask. Please provide credit for the content to me and any other authors.

All excerpts from other authors or organizations, including images, are intended to be fair use.

Portions Copyright © 2021-2022 by Steven K. Stroh.

Blanket permission granted for TAPR to use any Steve Stroh content for the TAPR Packet Status Register (PSR) newsletter (I *owe* them from *way* back).

1

Attending Ham Fair is on my Amateur Radio (and especially Zero Retries) bucket list. There are many interesting radios for the Japan market that are never exported, or mentioned outside of Japan. Early in my Amateur Radio career, when I was directly involved in producing the ARRL and TAPR DCCs, Amateur Radio Operators from Japan attended, and it was always fascinating talking to them about what was happening in Japan.